

CLAIMS:

1. A safety device for an automatic machine system including a plurality of operating areas in which an automatic machine carries out operation on objects and preparing areas adjacent to the respective operating areas and in which the objects to be fed into the respective operating areas by an operator are prepared, the safety device comprising:

first detecting means each disposed between each the operating area and the preparing area to detect entrance of an operator into each the operating area;

discriminating means for discriminating the operating area in which the automatic machine is operating; and

means for stopping the automatic machine when entrance of an operator into the operating area is detected by the first detecting means corresponding to the operating area which is discriminated by the discriminating means as the area where the automatic machine is operating.

2. A safety device for an automatic machine system including an area for installation of an automatic machine, a plurality of operating areas adjacent to the installation area and where the automatic machine enters and carries out operation on objects, and preparing areas adjacent to the respective operating areas and in which the objects to be fed into the respective operating areas by an operator are prepared, the safety device comprising:

first detecting means each disposed between each the operating area and the preparing area to detect entrance of an operator into each the operating area;

discriminating means for discriminating the operating area in which the automatic machine is operating;

means for stopping the automatic machine when entrance of an operator into the operating area is detected by the first detecting means corresponding to the operating area which is discriminated by the discriminating means as the area where the automatic machine is operating;

second detecting means each disposed between the installation area and each the operating area to detect entrance of an operator into the installation area; and

means for stopping the automatic machine when entrance of an operator into the installation area is detected by the second detecting means corresponding to the operating area other than the operating area which is discriminated by the discriminating means as the area in which the automatic machine is operating.

3. A safety device for an automatic machine system including an area for installation of an automatic machine, a plurality of operating areas adjacent to the installation area and where the automatic machine enters and carries out operation on objects, and preparing areas adjacent to the respective operating areas and in which the objects to be fed into the respective operating areas by an operator are prepared, the safety device comprising:

first detecting means each disposed between each the operating area and the preparing area to detect entrance of an operator into each the operating area;

means for discriminating the operating area in which the

automatic machine is operating;

means for stopping the automatic machine when entrance of an operator into the operating area is detected by the first detecting means corresponding to the operating area which is discriminated by the discriminating means as the area where the automatic machine is operating;

second detecting means each disposed between the installation area and each the operating area to detect at least one of entrance of an operator into the installation area and entrance of the automatic machine into each the operating area; and

means for stopping the automatic machine when the second detecting means corresponding to the operating area other than the operating area which is discriminated by the discriminating means as the area where the automatic machine is operating detects at least one of entrance of an operator into the installation area and entrance of the automatic machine into the operating area other than the operating area which is discriminated as the area where the automatic machine is operating.

4. The safety device for an automatic machine system according to claim 1, 2, or 3 further comprising:

means for outputting an informing signal for informing of the operating area where an operator is staying, in accordance with an operator's operation; and

means for controlling the automatic machine, in response to the informing signal, so that the automatic machine does not enter the operating area where an operator is staying.

5. A safety device for an automatic machine system including an area for installation of an automatic machine, a plurality of operating areas adjacent to the installation area and where the automatic machine enters and carries out operation on objects, and preparing areas adjacent to the respective operating areas and in which the objects to be fed into the respective operating areas by an operator are prepared, the safety device comprising:

first detecting means each disposed between each the operating area and the preparing area to detect entrance of an operator into each the operating area;

means for discriminating the operating area in which the automatic machine is operating;

means for stopping the automatic machine when entrance of an operator into the operating area is detected by the first detecting means corresponding to the operating area which is discriminated by the discriminating means as the area where the automatic machine is operating;

second detecting means each disposed between the installation area and each the operating area to detect entrance of an operator into the installation area and entrance of the automatic machine into each the operating area;

means for stopping the automatic machine when the second detecting means corresponding to the operating area other than the operating area which is discriminated by the discriminating means as the area where the automatic machine is operating detects entrance of the operator into the installation area;

means for outputting an informing signal for informing

of the operating area where an operator is staying in accordance with the operator's operation; and

means for stopping the automatic machine when entrance of the automatic machine into the operating area where an operator is staying is detected by the second detecting means corresponding to the operating area, upon receiving the informing signal indicating that the operator is staying.

6. The safety device for an automatic machine system according to claim 1, 2, 3, or 5 further comprising indicating means for enabling an operator to recognize the operating area which is discriminated by the discriminating means as the area where the automatic machine is operating.

7. The safety device for an automatic machine system according to claim 6, wherein the indicating means is a lamp and/or a buzzer.

8. The safety device for an automatic machine system according to claim 1, 2, 3, or 5, wherein the automatic machine is a robot.

9. The safety device for an automatic machine system according to claim 1, 2, 3, or 5, wherein the first detecting means are safety fences.

10. The safety device for an automatic machine system according to claim 2, 3, or 5, wherein the second detecting means are photoelectric sensors.